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PRELIMINARY REPORT

ON THE  
PROPOSED LINE OF RAILWAY  
BETWEEN  
THE CITY OF SAINT JOHN  
AND  
THE HARBOUR OF SHEDIAC,  
BY  
J. WILKINSON, Esquire

*Laid before the House of Assembly by command of His Excellency the  
Lieutenant Governor.*



Ordered to be Printed, 13th March, 1849.

FREDERICTON:

J. SIMPSON, PRINTER TO THE QUEEN'S MOST EXCELLENT MAJESTY.

1849.

REPORTED TIME OF FALLING

THE CITY OF SAINT JOHN

THE HARBOUR OF SHANTUNG

J. W. F. KILPATRICK



Ordered to be printed 1844

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*Fredericton 3d March, 1849.*

SIR,—Since the close of the Exploration and Survey of the proposed Line of Railway between Saint John and Shediac, the construction of the plans and sections in a manner to be practically available for definitely laying out the work, has been proceeding with all diligence, with a view to complete the same during the present Session of the Legislature. But the extent of labour involved renders doubtful the possibility of accomplishing this object.

In the meantime it is less difficult to supply for the information of His Excellency the Lieutenant Governor, such general description of the character and merits of the Line as may be necessary to satisfy the immediate interest of the Legislature and the Public.

Section 1. Commencing at the head of the Mill Pond in the City of Saint John, the first portion of the Line, for a distance of upwards of 4 miles, presents no material obstacle. At Lawler's Lake, near the fifth mile, the route is crossed by a barrier of solid limestone of upwards of a mile in width. This may be surmounted by a rise eastward of 30 feet per mile for about  $1\frac{1}{4}$  miles, and a fall of 20 feet per mile for about 2 miles. To attain these gradients a mean depth of 12 to 15 feet of rock cutting for a mile in extent will be necessary. The maximum depth will be about 35 feet for 7 or 8 chains only.

§ 2. From hence following the Shore of Kennebecasis Bay, the chief obstacles are Davidson's, Henderson's, Harris', and Forrester's Coves, until we reach the head of the last, at a distance of  $15\frac{1}{4}$  miles from Saint John. The intersection of these in a favourable manner will require due consideration. The cost of this portion of the Line must necessarily exceed the average expense of the remainder; but the result will be the attainment of gradients varying very slightly from a level. It was supposed that a shorter, less expensive, and sufficiently favourable route might be found through Lakefield, by the Valley of Salmon Creek. But the result of a careful exploration and section proved that the summit could not be overcome by a less favourable maximum gradient than 136 feet per mile, descending into the Valley of Hammond River. It is exceedingly doubtful that any other descent into the Valley of this River would prove more favourable.

§ 3. From the head of Forrester's Cove the Line will intersect Hammond River nearly a mile below the present Bridge, and continue by a straight line through the Marsh until it touches the south Shore of Darling's Lake. Following the latter by easy curves, and nearly on a level, until it intersects Groom's Cove; it proceeds thence with slight deviation from a direct course, to the head of Acicack Marsh, near Hampton Ferry, and at 23 miles 24 chains from Saint John.

From thence it continues by a direct and level line along the Marsh, intersecting the Kennebecasis at a favourable point a little below Mr. Wright's Farm; and thence with a slight change of direction to the northern end of the old Toll Bridge, at 28 miles from Saint John.

§ 4. From hence it was supposed that the Line might avoid the immediate bed of the Valley, by following a lateral valley running nearly parallel, and to the north westward of the Post Road. A comparative survey and section proved that there would be no saving in distance and most probably a heavier expense of construction, whilst the gradients, though very favourable, would be greatly inferior, involving for a mile and a half in distance a maximum of 25 feet per mile, against a nearly uniform level by the River route.

§ 5. Following the latter from the Toll Bridge, to the left of Norton Upper Church, by a direct Line crossing Hay's and Barbarie's Meadows, and the River to the foot of the high ground on the left or southern bank, nearly opposite to the Roman Catholic Chapel, and thence following this bank by a course nearly straight, the line recrosses the River near the Finger Board, at a distance of 34 miles from Saint John.

§ 6. From hence the Line will most favorably follow through the right or northerly bank of the River, varying from level to the maximum rise of seven feet per mile, until it approaches Studholm's Mill Stream at 42 miles 32 chains from Saint John. A little below this Stream it will again cross the main River, and thence keeping as close as practicable to the left or southerly shore, it will recross the River twice within the distance of half a mile, a little below the situation of Fox Hill, and will continue thence nearly straight, gradually leaving the River widely to the left and rising at nearly the uniform rate of seven feet per mile, to the Race Course, on the property of A. C. Evanson, Esquire, Sussex Vale, at the distance of 45 miles 61 chains from Saint John.

On reaching this situation, the traveller is scarcely conscious that he has yet not attained so high an elevation above the level of the Sea as some parts of the City of Saint John.

The following is the relative height of this point in Sussex Vale :—

Above the highest Freshet level of Kennebecasis Bay,	...	51 Feet.
" High water, Spring tides, at Saint John,	...	56
" " " at Bend of Petitcodiac,	...	53
" " " at Shediac,	...	76

§ 7. From hence, passing a slight rise and again descending by a fall of 12 feet per mile into the Valley of Salmon River, (the principal branch of the Kennebecasis,) the course of the Line will be nearly direct, with an uniform rise of seven feet per mile, to the mouth of Stone's Brook, distant 52 miles 28 chains from Saint John.

§ 8. From hence the choice of two routes is offered, of each of which a careful survey and section has been made. The first is by the Valley of Stone's Brook to the immediate source of the Annagance. The second continues by the Valley of the Salmon River to the "Portage," and thence, after twice intersecting the Post Road, descends and meets the former route at a lower point in the Valley of the Annagance.

The distance by each route will be nearly the same; but by the first the summit is crossed by a maximum rise of 22 feet per mile, and the same rate of fall for a short distance into the Valley of the Annagance.

By the second an equally favourable rise can be obtained only by a heavier proportion of cutting and embankment, and it will not be easy to obtain a more favourable descent into the Valley of the Annagance than at the rate of 40 feet per mile.

As the intersection of this summit will determine the maximum gradient eastward, between the Bend of Petitcodiac and Saint John, the route by Stone's Brook is therefore obviously to be preferred.

By this route the summit is passed at a distance of 56 miles 13 chains from Saint John, and at an elevation of 150 feet above high water.

§ 9. For a short distance, as already observed, the descent is thence at the rate of 22 feet per mile, and afterwards at the uniform rate of 5 feet per mile, to opposite Hayward's Mills, distant 63 miles 56 chains from Saint John. From thence by a nearly uniform descent of 6 feet per mile, the Line passes Steves' Mill at 66 miles 62 chains, and Steves' Tavern at 69 miles from Saint John.

§ 10. After first touching the Petitcodiac River, the course of the Line will require mature consideration, and will be governed by the result of the Survey of the River. It was a prevailing opinion amongst the more intelligent inhabitants, that the Table Land on the north side of the Petitcodiac would prove to be favourable. Its general appearance so far sustained this opinion that the fact could be determined only by actual examination.

The chief advantage of this route would be to avoid contact with the Petitcodiac River. A thorough exploration and section were therefore made, the general results of which are as follow.

From Steves' the section presents a series of ascending and descending inclinations, varying from 5 to 25 feet per mile to the Fredericton Road near Pitfield's, at the distance of 77 miles 21 chains from Saint John.

From thence the inclinations vary from 12 to 78 feet per mile, to Hall's Stream, at the distance of 90 miles 22 chains from Saint John; and from thence by inclinations varying from 4 feet to 53 feet per mile, to Milne's Point, Shediac Harbour, distant 105 miles 20 chains from Saint John.

These unfavourable gradients proved not only the necessity of a survey of the immediate Valley of the Petitcodiac River, but also of a thorough re-exploration of the ground between the Bend and Shediac.

§ 11. Two other variations of route between the latter were therefore surveyed and levelled; and thus a comparison of three routes was obtained, each terminating near the mouth of Hall's Stream, at the Bend, and at Milne's Point at Shediac. The courses of these routes will be more easily understood by a glance at the Map than by much description.

The following is a brief summary of their respective merits:—

	Distance from Bend to Shediac.	Maximum Gradient.	
		Eastward.	Westward.
1. Mill Stream and direct Route,	15 m. 30 c.	38 ft. per m.	53 ft. per m.
2. Babineau Marsh and Scadouck Route,	16 miles.	86 "	30 "
3. Mill Stream and Scadouck Route,	16 m. 54 c.	23 "	30 "

It is probable that a fourth route by way of the Valley of the Shediac River, with a still more favourable maximum gradient than the last, might be found, but only by materially increasing the distance, and with an unfavourable approach to the Harbour.

§ 12. It remains only to compare the merits of the immediate Valley of the Petitcodiac, and of the Table Land northward, for the object of the Railway.

The latter route would present alternate rises and falls which at some points could be reduced to bare practicability, only by heavy cuttings and embankments; whilst the only advantage proposed would be to avoid contact with the tortuous channel, tides, floating ice, and soft banks of the Petitcodiac.

It does not appear however that it is really necessary to come in contact with these in any manner involving material difficulty; whilst the working character of the Line, when constructed, would be of unsurpassed excellence.

From Steves' to Pitfield's the mean inclination would scarcely be 7 feet per mile, and from thence the remaining distance to the Bend, about 14 miles, would be level.

The increase in the whole distance from Saint John to Shediac by this route will be about three miles, but with the advantage of touching the Harbour at the Bend, which is not approached within two miles by the direct route.

By adopting the immediate Valley of the Petitcodiac we have therefore a Line of Railway of 108 miles in extent; connecting three of the most important Harbours in the Province by a ruling gradient between level and 7 feet per mile, and two maximum gradients each of only 30 feet per mile. It is most probable that the latter, favourable as they are, may be still further reduced.

§ 13. It will be proper, for instance, that a thorough examination of the vicinity of Lawler's Lake and Portage Cove, near Saint John, should be made, in order to determine the practicability of preserving an uninterrupted level at that point within a warrantable limit of expense. It is scarcely doubtful that by a slight variation of the Line and some increase of expense, the rise of 30 feet per mile from Shediac, might also be reduced to the same limit as that at Stone's Brook, say 22 feet per mile, which would then become the heaviest gradient of the Line.

This rise is very little greater than what is termed the angle of repose; or that inclination upon which the friction of a Train of Carriages at rest is just sufficient to prevent their being set in motion by the force of gravity.

§ 14. A system of gradients so favourable, will place this Road in the first class of working Lines.

It is true that advanced knowledge and experience have proved the practicability of ascending steeper inclinations than at an earlier period of Railway construction were deemed to be within the capacity of unassisted Locomotive Engines on smooth Rails, and that therefore, in a difficult country, the necessity of heavy cuttings and embankments is much diminished.

But the economical value of easy gradients is not consequently reduced, where natural facilities admit, as in this instance, of their being obtained at a moderate first cost; for, however adequate may be the mechanical skill necessary to meet the difficulty, the working expenses must be proportionally increased by the steepness of the inclinations to be overcome.

A few words in explanation of this fact may not be misapplied.

A difference of experimental results exists as to the force of traction necessary to set in motion a given load upon a level rail. They vary from seven to nine pounds per ton, giving a mean of about 8lbs or 1-280th part of the load. It is known, therefore, that 1 in 280, or 19 feet nearly per mile, is that degree of inclination which has just been explained as the angle of repose, and is the datum from which to compute the increase of force necessary to overcome any given increase of inclination.

Hence the power which would be sufficient to draw upon a level, 100 Tons

Would ascend an inclination of	19 feet with only	50
"	" 38 " "	33
"	" 57 " "	25
"	" 76 " "	20

It is yet doubtful whether the effects of this law can be conveniently mitigated by mechanical skill in the adaptation of Locomotive Engines.

It is therefore of importance to devote due pains to the discovery of that line of ground between the extreme points to be connected, which will afford the most favourable maximum gradient at the least warrantable expense.



This object will be more readily appreciated by a view of the working capacities of a few existing or projected Lines in America, the maximum gradients of which are known as compared with the same capacity of a Line perfectly level.

	Max. Gradient in ft. $\nabla$ mile.	Load equal to the tractive force of 800 pounds.
Western Rail Road, Massachusetts, ...	83	18 6-10ths Tons.
New York and Erie Rail Road, ...	68	21 8-10ths
Montreal and Portland, ...	50	27 5-10ths
Saint Andrews and Woodstock, ...	35	35 2-10ths
Saint John and Shediac, ...	22	46 3-10ths
A level Line, ...	0	100

To the above may be added that portion of the projected Trunk Line of Railway between Quebec and Halifax, which would intervene between Shediac and the latter Port. The most favourable maximum gradient by which the Cobequid Hills can be crossed, according to the Report of Major Robinson, is 1 in 79 or 66 feet per mile. The same tractive force, therefore, which would transport 46 tons to Saint John, would convey only 22½ tons to Halifax.

If to this important advantage be added that of a saving of at least 42 miles in distance to the Port of Saint John, which is as open and accessible at all seasons of the year as Halifax, it may safely be inferred that the diversion of any portion of the trade which may fairly belong to this Province by the proposed route of the Trunk Line is exceedingly improbable. It may rather be anticipated with confidence that, in cases of emergency excepted, nearly the whole of the import and export business that may be created by any such connection with the Saint Lawrence, will incline to the open Harbours of the Bay of Fundy.

For these, besides the recommendation of much greater proximity to the Saint Lawrence, have the natural advantage of a high flow of tide, favourable to the prompt examination, repair and equipment of the larger class of vessels, and which is not possessed by Halifax.

§ 15. The curvature of the Saint John and Shediac Railway will on the whole be very favourable. In one or two instances only is it probable that curves of so limited a radius as 2000 feet will be necessary.

§ 16. With the exception of that at Lawler's Lake, the rock-cutting will be insignificant. The earth-work generally will be light, of a quality suitable for a firm road-bed, and easy of execution at common slopes. That between the Bend and Shediac will probably be the heaviest in amount. The largest amount of bridging will fall between Saint John and Hampton Ferry, but with many facilities for its effective and economical construction. There will be no other expensive Bridges on the Line. The number or extent of these structures cannot at present be stated.

§ 17. The foundation of more than one half of the Line may be constructed by piling, a method which has been proved in the United States to be thoroughly effective in securing the all important quality of a Railway, stability of foundation, especially where the ground is liable to be periodically overflowed, and where the transportation of any other material proper for the road-bed would be too expensive as well as more liable to disturbance and injury. This method is not more remarkable for its efficiency than for the lightness of the cost as compared with other methods, and has many advantages. The chief objection to its employment is the perishable quality of the material. But if any effective and sufficiently economical preservative process could be applied, that objection would vanish.

§ 18. There is however an important difference between the durability of the wood available in this Province, and of that which has chiefly been employed in the



United States. In the latter Country a period of 10 or 12 years is counted upon as the utmost limit, during which to rely upon the soundness of White Oak piles; and in the Southern States Pine is found to decay in half that time. The durability of the Larch of this Province appears to be much greater. Fence-posts of this material have been credibly pointed out as having fulfilled their office for upwards of forty years, and which yet remain to all appearance sound and efficient. Assuming however that the ordinary duration of this wood, under the same circumstances, were only half that period, it is to be regretted that it should be destroyed or comparatively sacrificed as an article of export, whilst it is of so much importance to the internal economy of the Province.

§ 19. The present occasion does not permit of reference to the details of construction. It will be sufficient to say that local circumstances and facilities hold out the assurance that the road may be completed within the limit of the average cost of similar works in the State of New York; to some of which it will have more resemblance than to those of New England.

From authentic Tabular Statements which have been published, the average cost of some of the principal Lines of Railway in the States of New York and Massachusetts respectively, appears to be £5,649 currency per mile in the former, and £9,788 currency per mile in the latter, in each case for a single track.—(App. A and B.)

The method of construction, and the conveniences to be provided, would require mature consideration. They ought to be as perfect as the circumstances and reasonable prospects of the Line will warrant.

The daily accumulating knowledge and experience on the subject elsewhere, should be amply consulted, and above all, it is desirable that no expenditure should be commenced until the necessary means are secure for completing such divisions of the Line as may be profitably opened with the least possible delay; nor until a system for the control and management of such expenditure shall be so devised and arranged as may best ensure efficiency and a true economy.

§ 20. The division of this Line most obviously indicated as the portion which may first be constructed and opened with the surest prospect of an immediate return, is that connecting the Harbour of the Bend with the terminus at Shediac. By means of this work alone the Summer trade of the Gulf and River Saint Lawrence would be accessible from the Bay of Fundy, and the shipping of the Province would be relieved from much of its dependence on Foreign Ports, into which it must necessarily be admitted only on disadvantageous terms.

All that is required through the Atlantic Ports of the United States, must reach the lower Provinces encumbered with the tolls and charges of Canals and Railways of great length, whilst an uninterrupted navigation between the same sources of production and our own Ports, offers a much cheaper means of transit, which only awaits a moderate degree of enterprise to become fully available.

§ 21. The convenience and sufficiency of Shediac as an entrepot for the object in view is not questioned. It is within 60 hours communication by steam from Quebec. It nearly equally divides the great arch of coast which forms the western boundary of the Gulf of Saint Lawrence, extending from Cape North to Cape Gaspé, a distance of about 450 miles, embracing in that extent a soil of acknowledged excellence; and fisheries, the ultimate commercial value of which, to these Provinces, would perhaps be dearly exchanged for the more dazzling treasures of other coasts. The fertile Island of Prince Edward lies almost in view of the Harbour, and the coal mines of Pictou within a few hours sail. Indications of coal also every where surround this important locality; and from Saint John to Shediac, in addition to lumber and most descriptions of farm produce, limestone, freestone, gypsum, salt, and iron, in abundance, will eventually become tributary to the traffic of the line.

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Independently of these considerations, the intrinsic importance of the Harbour of Shediac to Shipping frequenting the Gulf, is thus stated by Captain Bayfield—

“Shediac Harbour is the easiest of access and egress on this part of the Coast, being the only one which a vessel in distress can safely run for as a Harbour of Refuge. The space in which shipping may be moored, in from 12 to 17 feet at low water, is three quarters of a mile long and from 170 to 300 fathoms wide. The depth that can be carried in by a good Pilot is 14 feet at low water, and 18 feet at high water in ordinary Spring Tides; and the bottom of the channel is of mud, as is also the Harbour within. Although a slight swell may be felt in this Harbour at high water, in a north east gale, yet it is never sufficient to endanger in the slightest degree a vessel with good anchors and cables; even in the Bay outside the Bar, a vessel would ride safely in any gale not unusually strong for the Summer months.”

§ 22. The extent of navigation which would be saved by this communication between the Ports of Saint John and Quebec, would generally be from 500 to 600 nautical miles.

§ 23. It has been a cherished scheme almost coeval with the first settlement of the Province, to intersect the Isthmus separating the Bay of Fundy and the Gulf of Saint Lawrence, by a Canal. The absence of such an advantage has doubtless been very unfavourable to Inter-Colonial intercourse. But now that this enterprise remains in abeyance, it may be no cause of regret that the desired communication is not dependent upon a work of questionable expediency, as well as very doubtful practicability. Besides being more costly and liable to damage, a Canal sealed up for several months in the year, could not be equal in commercial value to a Railway.

§ 24. In touching upon the question of the probable cost of this Railway, it seems proper to remark, that in the cost of those to which reference has been made, an expenditure equal to about £2,000 currency per mile is included for the heavy iron Rail and its necessary appurtenances and fastenings. The Plate Rail now generally abandoned as insufficient, might probably cost half that sum. It is true that iron Rails could be procured by this Province from England at a lower rate than they can be obtained in the United States; but it is doubtful that the difference would exceed about £500 per mile in our favour, even at the present low rate of the material. By the adoption of an efficient iron Rail, a charge of about £1,500 currency per mile would therefore be necessary, amounting upon the whole Line, for a single track only, to the large sum of £162,000, of which £24,000 would fall upon the Bend and Shediac Division.

Now if by any method of construction all the essential qualities of a good Railway can be obtained, without at least the immediate necessity of this heavy charge, it will be agreed that in the present circumstances of the Province, it is desirable that such method should be fairly tried.

The saving in the item of iron alone would go a great way towards constructing a branch extension of this Railway through the most populous and fertile part of the Province to Fredericton, within a distance of 55 miles.

If on the assumed dispensability of the Iron Rail, we therefore deduct the sum of £1,000 from the average cost of Railways in the State of New York, (the light Plate Rail only until recently having been used on these Roads,) we have the probable sum of £4,650, as the extreme cost per mile. This, taking into consideration the difference in value of Timber in favour of this Province, may be regarded as a safe limit for present guidance. It is in fact, exclusive of the iron, equal to the cost of some of the best Lines of Railway in Massachusetts, not perhaps more easy of construction than the greater part of that between Saint John and Shediac.

§ 25. Upon this basis the cost of the division between the Bend and Shediac, for the distance of 16½ miles nearly, would be £74,400.

The successful opening of this portion of the Line would be a sure augury of the rapid construction of the remainder to Saint John. It is perhaps the shortest and most desirable experimental Line that could be constructed in the Province, and holds out the best assurance of success.

§ 26. Upon this point we are not left altogether to conjecture. By direction of the Government, during the past Autumn, the travelling at six different stations in the Province, was registered during three months by persons appointed for that purpose. An abstract of the result in a tabular form is annexed, (App. C.) with a computation of the number of travellers at the same rate for a whole year.

The Autumn, however, is considered the least favourable season during which to form an estimate of the aggregate of the year, as the rural population are then more restricted to the business of their farms. At other periods the highways frequently exhibit long unbroken lines of vehicles, demonstrating by the numbers, circumstances, and travelling disposition of the people, that the period has arrived for the introduction of the rail.

Even under the unfavourable circumstances adverted to, the lowest number of passengers at any station exceeds the number conveyed over some of the existing Railways in the United States, according to late Official Reports. A statement of a few of these is annexed, (App. D); but the number at the principal station, the Bend, exceeds the estimated number of at least one English Railway prior to its construction—the Great North of England. The estimated number for this Line was 75,158. The number at the Bend, as derived from the registration, is 87,700.

Referring to other statistical statements (Notes a. and b. App. F.) we find the last number exceeds even the realised traffic on at least two English Railways, and that the traffic of one of these falls short of the common Road traffic at three of the registered stations in New Brunswick.

§ 27. But in almost every instance the immediate consequence of the opening of a Railway is a vast increase of the number of travellers, varying from 100 to even 1,400 per cent. The annexed tabular statements will illustrate this fact. (App. E. and F.)

Assuming, therefore, on the evidence of experience wherever Railways have been established, that the increase of the ordinary travelling on the Saint John and Shediac Line will not fall short of at least 100 per cent. over that already in existence, and omitting that portion of the travelling at the Bend which inclines towards Dorchester, as not forming a part of that which would belong to the division between the Bend and Shediac, we have  $(21,925 - 5,946 \times 8) = 127,832$ , as the lowest number of passengers which may be counted upon during the first year's operation of the Railway.

Estimating the gross revenue to be derived from these at 1½d. each per mile, or 2s. for the fare through, the amount would be £12,783 0 0

Add for freight of merchandises and goods of all kinds at the assumed equivalent of 200,000 barrels at 6d., ... 5,000 0 0

Total gross revenue, ... £17,783 0 0

If we take the working expenses of the Line at the average of 38 per cent. of the gross receipts, according to experience in the State of New York, then—

From the gross revenue of ... £17,783 0 0

Deducting 38 per cent., ... 6,768 0 0

The net revenue will be ... £11,025 0 0

Or, 14 8-10ths per cent. net return upon the whole cost of £74,400 for the first year, and which, as in other instances, may be expected steadily to augment in

succeeding years. But of this say three per cent. should, with a view to safe management, be carried to a reserve fund against depreciation and renewals, leaving a clear dividend of 11 8-10ths per cent.

If to the first cost be added £24,000 for the supply of Iron Rails sufficient for heavy traffic, then upon the total cost of £98,400, the net return would be only 11 2-10ths per cent., from which deducting a reserve of three per cent. as before, a clear dividend of 8 2-10ths per cent. would remain.

§ 28. It may not be deemed altogether a departure from the proper object of this Report if a suggestion be offered as to the financial means of carrying the project into effect.

It is submitted, with deference, that the property of a well designed and judiciously managed Railway is not inferior to the best security which forms the basis of the present circulating medium of the Country.

It is therefore suggested, that upon the engagement of an association, formed for the construction and management of the Railway, to invest in the work a *bona fide* expenditure of one fourth of the whole estimated cost; such association might with due security to the public, be endowed, under proper restraints, with the Banking privilege of issuing Notes, in payment of the remaining cost, in sums at no time exceeding the amount actually due and payable for work executed, and necessary charges and expenses incurred.

Such Notes would not less clearly be evidence of value than those which at present circulate as money. They would represent a property affording to every eye evidence of its capacity of redeeming and extinguishing such Notes within a limited period by either of two methods.

First—By setting apart annually from the gross revenue of the Railway, six per cent. upon the whole amount of such notes in circulation, for their progressive redemption and extinction within seventeen years.

Second—By receiving such Notes in payment for Shares in the Stock of the Association, upon a footing of equality with the original Shareholders.

It may be objected that such Notes in the meantime could not be readily converted into specie or bills of exchange for mercantile purposes.

It may be answered that they would be at least as readily accepted as other Notes in exchange for any of the staple products of the country, required for exportation, and therefore would not be less conducive to internal industry and domestic advancement.

If the capital necessary to the construction of the work were borrowed from non-residents, it would most probably become the medium of an undue importation of merchandise tending to repress rather than to promote domestic industry.

The measure proposed would be to borrow the resident skill and labour of the country in the form of a reproductive investment under competent and responsible direction, and in a manner adapted to inspire the energies of the whole community with a healthy and permanent activity, more independent than heretofore upon external vicissitudes.

This measure would also leave wholly unencumbered the available resources of the Province, so far as it might be deemed expedient to apply the same to the construction of the Trunk Line of Railway between Quebec and Halifax.

Should the proposed Financial experiment, under proper guards and checks, subject to which only it should be tried, fail of success, the inconvenience would be limited. But should it be successful, it is submitted, that the lesson would be an important one to the future advancement of the Province.

I have the honor to be, Sir, your most obedient servant,

J. WILKINSON.

To the Honorable John R. Partelow, Provincial Secretary.



## (A)

*Tabular Statement of the Length, Cost, Receipts, Expenses, and Net Income of the principal Rail Roads in the State of New York, for 1845.*

(From Appendix to a Report by A. C. Morton, Esquire, Chief Engineer of the Saint Lawrence and Atlantic Rail Road, 1845.)

NAME OF ROAD.	Length, Miles.	Total Cost, Pounds.	Average cost per Mile, Pounds.	Receipts, Pounds.	Expenses, Pounds.	Net Revenue.	Per cent. per annum on cost.	Per cent. of Receipts for Expenses.	REMARKS.
Utica and Schenectady,	78	547,376	7,017	102,768	36,889	65,879	12	35.89	Single Track.
Utica and Syracuse,	53	279,218	5,268	50,596	18,750	31,846	11½	37.10	do.
Auburn and Syracuse,	26	192,068	7,387	24,950	11,081	13,869	7½	44.41	do.
Auburn and Rochester,	78	458,011	5,872	59,765	24,246	35,519	7½	40.56	do.
Tonawanda,	43½	187,763	4,316	29,167	9,251	19,916	10½	31.71	do.
Attica and Buffalo,	31½	85,500	2,736	17,574	7,743	9,831	11½	44.06	do.
Total,	309½	1,749,936	5,649	284,820	107,960	176,860	10	37.8	

All the above Roads, at the above date, were constructed with the Plate Rail, and were mostly single tracks. Aggregate length 309½ miles. Aggregate cost £1,749,936. Average cost £5,649 per mile. Total Net Revenue £176,860, equal to 10 per cent. (nearly) on the aggregate cost. Total expenses £107,960, equal to 37 8-10ths per cent. of the gross Receipts.

## (B)

*Tabular Statement of the Length, Cost, Receipts, Expenses and Net Income of the principal Rail Roads in the State of Massachusetts, for 1845.*

(From Appendix to a Report by A. C. Morton, Esquire, Chief Engineer of the Saint Lawrence and Atlantic Rail Road, 1846.)

NAME OF ROAD.	Length, Miles.	Total Cost Pounds.	Average Cost per mile, Pounds.	Receipts, Pounds.	Expenses, Pounds.	Net Revenue.	Per cent. per annum on cost.	Per cent. of Receipts for Expenses.	REMARKS.
Boston and Lowell,	25.75	483,149	18,763	89,017	44,760	44,257	9 2-10	50.28	Double Track.
Do. Maine,	71.00	471,832	6,645	71,766	38,524	33,242	7	53.68	Single do.
Do. Providence,	41.17	491,169	11,930	87,657	38,200	49,457	10	43.57	Do. do.
Eastern,	56.00	554,631	9,904	87,537	29,210	58,327	10	33.36	Do. do.
Boston and Worcester,	44.50	725,000	16,292	121,432	62,432	59,432	8 1-5	51.23	Double do.
Western,	156.00	1,999,898	12,819	203,370	110,714	92,656	4 2-3	54.43	Single do.
Fitchburg,	49.33	369,369	7,487	50,999	19,583	31,416	8 1-2	38.39	Do. do.
Nashua and Lowell,	14.25	125,000	8,772	28,170	12,000	16,170	12 7-8	42.60	2d track in progress.
New Bedford and Taunton,	20.00	113,405	5,670	19,552	7,346	12,206	10 3-4	37.56	Single Track.
Total.....	478.00	5,333,443	9,788	759,932	362,769	397,163	7 44-100	47.75	

Aggregate length of all these Roads is 478 miles. Total cost is £5,333,443. Average cost reduced to a single Track is £9,728 per mile. Total Net Revenue is £397,163, equal to 7 44-100 per cent. on the total cost. Total expenses £362,769, equal to 47 75-100 per cent. on the Gross Receipts. All the above Roads have the H rail, varying in weight from 55 to 63lbs. per yard.

(C)

*Abstract of the Registration of the number of Passengers at six Stations in New Brunswick, during three months in 1848.*

Station at	From		In August.	In September.	In October.	TOTAL FOR	
	Towards					Three Months.	One Year.
Spring Hill,	Woodstock,		2441	2179	2327	13,155	52,620
Do.	Fredericton,		2049	1984	2175		
Bend of Petitcodiac,	Shediac, Richibucto, Miramichi,		2213	2312	2707		
Do.	Sussex Vale, Saint John, Fredericton,		3071	3017	2659	21,925	87,700
Do.	Dorchester, Sackville, Nova Scotia,		2091	2049	1806		
Hammond River,	Saint John,		1081	875	1055	5,842	22,368
Do.	Westmorland,		1023	858	950		
Tantamar Bridge,	Dorchester,		2758	2608	2363	15,413	61,652
Do.	Nova Scotia,		2720	2616	2348		
Lancaster,	Saint Andrews,		506	562	666	3,238	12,952
Do.	Saint John,		449	532	523		
Black River, (North.)	Chatham, Miramichi,		988	961	873	4,776	19,104
Do.	Richibucto,		662	638	654		
			22,052	21,191	21,106	64,349	257,396

## (D)

*Statement of several Railways in the United States having a realized Passenger Traffic below 80,000 persons per annum.*

STATE.	Name of Railway.	Length in Miles.	Cost in Dollars.	Cost per Mile, Halifax Currency.	Number of Passengers.		Fare $\Psi$ Mile.		Dividends, 1847.
					1846.	1847.	In Cents.	In Pence, Halifax Currency.	
Virginia,	Petersburg,	63	946,721	£3,757		31,553	4 76-100	2 86-100	6½ $\Psi$ cent.
Ohio,	Little Miami,	84	1,325,959	3,946	54,265	78,342	2 3-8	1 42-100	8½ "
Ohio,	Mansfield and Sandusky,	56	808,560	3,610	9,783	20,737	2 67-100	1 6-10	"
North Carolina,	Wilmington and Raleigh,	167	1,800,000	2,695	32,383	38,393	4	2 4-10	"
Pennsylvania,	Harrisburg and Lancaster,	35½	860,000	6,037		57,786	4 1-10	2 46-100	6½ "
New York,	Buffalo and Niagara Falls,	22	205,903	2,340		78,506	3 4-10	2 4-100	"
New York,	Saratoga and Schenectady,	22	300,000	3,409		53,478	4	2 4-10	"
New York,	Schenectady and Troy,	20½	643,547	7,848		68,878	2 43-100	1 46-100	4½ "
New York,	Rensselaer and Saratoga,	25	475,801	4,758		66,293	3 48-100	2 9-100	"





## INCREASE OF PASSENGERS BY THE ESTABLISHMENT OF RAILWAYS.

*From Baron Charles Dupin's Report on the Paris and Orleans Railway.*

"Experience has proved both in France and abroad, that in a short space of time the facility, expedition and economy afforded by Railways, more than doubles the number of passengers and the quantity of merchandise.

"In order to support such statements, we will quote the following facts relative to the Railways of Belgium, England and Scotland, in positions of extreme difference, and giving rise to a variation in the returns which far exceeded all anticipation.

*Comparison of the number of travellers conveyed daily throughout the whole or a portion of the Line :—*

RAILWAYS.	No. of Passengers before the establishment.	No. of Passengers after the establishment.
Manchester and Liverpool,	400	1,620
Stockton and Darlington,	130	630
Newcastle and Carlisle,	90	500
Arbroath and Forfar,	20	200
Brussels and Antwerp,	200	3,000

*Increase of the number of Passengers by the establishment of a Railway.*

Liverpool and Manchester, ... ..	300 per cent.
Stockton and Darlington, ... ..	380 "
Newcastle and Carlisle, ... ..	455 "
Arbroath and Forfar, ... ..	900 "
Brussels and Antwerp, ... ..	1,400 "

Thus even taking as a criterion the road on which the proportional is least of all, we still find that the number of passengers will increase not only 100, but 300 per cent. The transport of merchandise will experience a similarly rapid increase.

*Progress in the conveyance by Railway of Merchandise compared to that of Passengers.*

Year.	Passengers.	Tons.
1834	924,063	22,909
1836	1,248,552	161,501
1838	1,535,189	274,808

Thus while the number of passengers increased 60 per cent. in four years, in the same time the quantity of goods increased 1100 per cent.

Extract of an official Report on English Railways made to the French Government by Edward Teisserence, its Agent, charged with the special duty of making a study of these Railways :—

"The Darlington Railway has produced by its low rates of passage and freight, a complete revolution in the region of country which it traverses. It has increased the value of land 100 or 200 per cent. By these low rates the freight estimated at 80,000 tons has increased to 640,000 tons. The passengers estimated at 4,000 have increased to 200,000."

The following extract on the influence of Railways in developing the resources of a Country, is taken from the second Report of the Irish Railway Commissioners :—

“ On the Newcastle and Carlisle Road prior to the Railway, the whole number of persons the public coaches were licenced to carry in a week was 343, or both ways, 686. Now the average daily number of passengers by Railway for the whole length, viz. 61 8-10 miles, is 228, or 1596 per week.”

(Note a.—This would be a realized passenger traffic of 82,992 for the year; or nearly less by 5,000 than the common road traffic at the Bend of Pettinodiac.)

“ The number of passengers on the Dundee and Newtyle line exceeds at this time 50,000 annually; the estimated number of persons who performed the same journey previous to the opening of the Railway having been 4,000.”

(Note b.—The realized traffic upon this Railway falls short of the existing common road travelling at three of the registered stations in New Brunswick.)

“ Previous to the opening of the Railway between Liverpool and Manchester, there were about 400 passengers per day, or 146,000 per year, travelling between these places by coaches; whereas the present number by Railway alone exceeds 506,000.

“ In foreign countries the results arising from the same cause are equally if not more striking. The number of persons who usually passed between Brussels and Antwerp was 75,000 in the year; but since the Rail Road has been opened from the former place to Malines, it has increased to 500,000; and since it was carried all through to Antwerp, the number has exceeded a million. The opening of a branch from Malines to Termonde appears to have added 200,000 to the latter number; so that the passenger traffic of that Rail Road superseding a road traffic of only 75,000 persons, now amounts to 1,200,000.

“ It is remarkable that on this as on most other Rail Roads, the greatest number of passengers consists of those who travel short distances, being as two to one compared with those who go the whole distance. This appears from a statement read by Mr. Loch, before the Statistical Society at Manchester, shewing that between April 30 and August 15, 1836, 122,417 persons travelled the whole distance, and 244,834 short distances, chiefly to and from Malines.”

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